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THE ANCYLATHERAN CALAMAGROSTIS OF EASTERN NORTH AMERICA

Father Louis-Marie, O.C.

(Plates 836 and 837)

The discovery at Mount Commis, in the Quebec Appalachian Range, some eight miles behind Rimouski City, of a new Calamagrostis belonging to a difficult group[1] necessitated the re-examination of the related species. *Calamagrostis Lepageana*, n. sp., pertains to Clarion's genus *Deyeuxia*[2] having the sterile rachilla prolonged on the side of its solitary flower[3] and a geniculate awn twisted below and longer than the glumes. For the species with long or short geniculate and twisted awn, so highly developed in western South America, in the mountains of Mexico and in the Cordilleran Range of North America, Ascherson & Graebner[4] have proposed the subsection *Ancylatherae*. The species of the other subsection (*Orthoatherae*), on the contrary, with straight awn and the lemma much longer (¼ to ⅓) than the palea, centering around the most aggressive and variable *Calamagrostis canadensis*, are copiously represented in eastern North America, while the former group, there very restricted geographically and specifically, takes the recessive attitude of

[1] Stebbins, Jr., G. L.—A Revision of some North American species of Calamagrostis. Rhodora **32**: 35–59, plate 195, 1930.

[2] Palisot de Beauvois.—1812. Essai d'une nouvelle Agrostologie, 43.

[3] The species of *Deyeuxia* with 2–3-flowered spikelets have been transferred to *Trisetum*, in the subgenus *Isoelytrum* Ls-Marie. Cf. The Genus Trisetum in America by the author, in Rhodora **30**: 209–23, 237–45 (1928).

[4] Ascherson & Graebner.—Synopsis der Mittel-Europaïschen Flora. II, part 1, pp. 197–223.

endemic species of the pre-Wisconsin dispersal with disrupted ranges.

Up to date, only four species have been recognized in eastern North America, as pertaining to the Deyeuxian type, with arista geniculate and twisted: *Calamagrostis Porteri* A. Gray, *C. perplexa* Scribn., *C. purpurascens* R. Br. and *C. Pickeringii* A. Gray. Professor Fernald has been interested for a long time in the last species and in its var. *debilis* (Kearney) Fern. & Wiegand.[1] He writes in Rhodora: "Dominant on peaty barrens at all levels in Newfoundland and Nova Scotia, it is absent from New Brunswick and most of Maine, but reappears in the alpine areas of Mt. Katahdin, the White Mts., the northern Green Mts. and the Adirondacks, whence it occasionally descends to the valleys . . . The range of the species is, emphatically, a disrupted one. The nearest allies of *C. Pickeringii* . . . , are *C. Porteri* Gray and *C. perplexa* Scribn. *C. Porteri* is one of the rarest of relic-species, with four isolated stations: one each, on rocky wooded slopes, in Chemung Co., New York; Huntington Co., Pennsylvania; and Page and Giles Cos., western Virginia. *C. perplexa* is even rarer: with the original station a bluff in Tompkins Co., New York, the other (for a similar but not quite identical plant) a quartzite cliff in Piscataquis Co., Maine.

"Also having a geniculate and exserted awn is the arctic *Calamagrostis purpurascens* R. Br., likewise with a remarkably disrupted range: the unglaciated margin of Greenland; arctic northwestern Canada, thence along the Cordillera to South Dakota, Colorado, Nevada and California; with the only known station in the East (south of Greenland), a single colony on one of the highest cliffs of Bic, Quebec."[2]

Thanks to the courtesy of the Director of the Gray Herbarium, the types of *C. Porteri* and *C. perplexa*, and the specimens from the other localitites mentioned in the above quotation have been sent to me for study and comparison. The material from the type locality for each species seems to be quite unique, and the other collections referred to it, that I have seen,[3] are not very

[1] Fernald, M. L. & K. M. Wiegand.—*Calamagrostis Pickeringii*, var. *debilis*, Rhodora **15**: 135–136 (1913).

[2] Fernald, M. L.—Recent Discoveries in the Newfoundland Flora. Rhodora **35**: 212–213. 1933.

[3] Hitchcock's Manual of Grasses of N. Amer. (1935) cites three localities: New Hampshire, White Mts.; Ontario (Lake Nipigon), Canada; Minnesota (Fond du Lac).

good matches, as the following short analysis should amply prove.

C. Porteri A. Gray, Proc. Amer. Acad. **6**: 79. Huntingdon County, Pa., *Porter*, Aug. 12, 1862 (type at the Gray Herbarium).

Prof. Thomas C. Porter, botanizing in Huntingdon Co., Pennsylvania, met for the first time his *Calamagrostis*, on August the 11th, and snatched up an incomplete specimen; this was on Warrior Ridge, at the spot called "Pulpit Rocks". The next day, and probably in the same place, he collected two complete plants which later on were taken as the type; on the label there is an important documentation: "*Calamagrostis Porteri*, n. sp. *Calamagrostis confinis*, Nutt.?[1] Near Alexandria, Huntingdon Co., Penn. Aug. 12, 1862 leg. T. C. Porter". On a second label, also in Porter's writing, we read: "*Calamagrostis confinis* Nutt.? The hairs at the base of the paleae are shorter than given in the description of the species and the leaves have a tuft of pubescence beneath the ligule. I found it not in a swamp, but in a dry wood on the side of a steep hill." This note, apparently cut from a letter to Asa Gray, written after the publication of *C. Porteri*, in a moment of not very good humour, beside adding a precious detail on the habitat, stresses two strategic characters, which since then have figured in the Floras, holding the aa and bb of the keys: the tuft of pubescence at the summit of the sheath and the abundance or shortness of the callus hairs.

Professor Porter returned to "Pulpit Rocks, Warrior Ridge" in August, 1864, and found an extremely large specimen of his species, with a strong culm, 2 mm. thick at summit, the inflorescence perfectly erect, interrupted and 22 cm. long. He returned to Huntingdon Co. eighteen years later, and recollected his *Calamagrostis* abundantly, on August 18, 1882.

The Gray Herbarium has two sheets of this collection. One is labelled by the collector: "near Barree, Huntingdon Co., Pa., in woods on hillsides." The specimen is nice and complete with very broad leaves, up to 9 mm. wide, and enough rhizome to show why the plant cannot grow in tussocks. As in *C. perplexa*,

This collection (Wood's in 1899), the type of *C. breviseta*, var. *lacustris* Kearney, belongs to the *C. Pickeringii* group.

[1] *C. confinis* Nutt. (*Arundo confinis* Willd.), still described in the 6th. edition of the Gray's Manual (1890), is now placed in *C. inexpansa*, Gray. Beal retained it as *C. neglecta*, var. *confinis*.

the young shoots develop sympodially at the extremity of the horizontal section of the rhizome where no lateral branches are found. The second sheet, which came from the herbarium of Walter Deane through Charles Edward Faxon, carries a long and rather weak specimen. It is labeled: *Deyeuxia Porteri* (Gray) Vasey. Wooded hillside on Juniata R. [river], below Barree, Huntingdon Co., Pa." Now, this last bit of geography is useful. The Juniata River passes Alexandria and Barree through the Warrior Ridge. The station below Barree and that at Pulpit Rocks are both in the Warrior Ridge and near Alexandria, in woods on hillsides; they must be very near together, if not the same.

The five sheets of Porter's collections form a lot morphologically homogeneous. Typically, then, the species is a tall (1–1.30 m.) grass having blades 5–9 mm. broad and ligule 5–8 mm. long; the panicle, 11–22 cm. long, is generally interrupted below and long-exserted (14–28 cm.); the somewhat chartaceous glumes differ in length by 0.5 mm.; the lemma and palea are subequal, differing only by 0.2 mm., the awn (3 mm. long) is shorter than the glumes, as in *C. perplexa*, and protrudes only at the side of the spikelet; the hairs, nearly absent on the front of the callus, are few, but sometimes quite long, on its sides; the anthers are 2–3 mm. long and the young caryopsis red.

The other collections from Virginia and New York State do not all match the type. The nearest seems to be *Steele & Steele* no. 103, from Stony Man Mt., alt. 3600 ft., in the Blue Ridge, near Luray, Page Co., Virginia, Aug. 11, 1901. The plant is weaker than the type in all its characters: culm 69–74.4 cm. high, with blades 4–5 mm. broad; panicle 8.4–13 cm. long; the first glume about 1 mm. longer than the second; lemma 3.6 mm. long, palea 3 mm. long: these two last figures do not fit the definition of *C. Porteri*. The other number from Page Co. is a recent collection of July, 1935, from Mt. Marshall, alt. 900 m., in the Blue Ridge, *H. A. Allard*, no. 754. It is a tuft of nine flowering stems and of a few sterile shoots, sharing apparently the same much branched rootstock; the culm is wiry and very thin, less than 1 mm. in diameter under the panicle which is 7–10 cm. long, and bears three narrow (2–3 mm. broad), almost erect, dark green leaves. This plant seems to be out of place in the cover of

C. Porteri, and was put there only temporarily. In Giles Co., Virginia, on Bald Knob, alt. 4448 ft., Aug., 1901, H. L. Clark found, and poorly collected, a *Calamagrostis* having the "specific geniculate twisted awn and the foliar tuft of pubescence". But how can we reduce to the umbrophilous pale green *C. Porteri*, confined to wooded slopes and hillsides, this specimen, "de grande lumière", with purplish-bronzed spikelets and growing on a "Bald Knob", at 4448 ft. altitude? Its leaf-blades are 12 cm. long and 4 mm. broad; its panicle goes down to 4.4 cm. long, its spikelet to 3.5 mm. and the lemma to 2.6 mm. long. The plant of New York State is from Sullivan Hill, upper waters of the Susquehanna River, Chemung Co., and was collected by *T. F. Lucy* (no. 11850), July 27, 1895. It resembles Porter's plants in general habit and gross morphology but is strangely different in its spikelet, which has very heteromorph glumes, the lower being 4–4.2 mm. long and the upper only 3–3.5 mm. long; the floret, on the contrary, has a palea as long as the lemma, and often a little longer. These two last and significant characters belong neither to *C. Porteri* nor to *C. perplexa*.

The few collections found in the largest American herbaria under the cover of *C. Porteri*, beside the topotypes, are so different from the type that even a keen botanist could not get through them a true conception of the species. This may have been the case in the publication of *C. insperata* Swallen,[1] collected in Jackson Co., Ohio, less than 300 miles from the type locality of *C. Porteri*, by F. Bartley and L. L. Pontius. Judging by the original diagnosis and by a few spikelets of *C. insperata*, sent to me by Mrs. Agnes Chase, this last species matches *C. Porteri* quite perfectly: culms 85–110 cm. high; longest blade 30 cm. long and 8 mm. wide; panicles 12–14 cm. long; glumes unequal, the longer 5 to 5.5 mm. long; in the few spikelets dissected by me the 1st glume was 5 mm. long and the 2nd 4.2 mm. The awn is strongly twisted and the pattern of callus-hairs thus described by the author "moderately dense, the lateral ones about half as long as the lemma"; anthers about 2 mm. long. All these im-

[1] Journ. Wash. Acad. Sci. 25: no. 9, 413–414. Sept. 15, 1935. TYPE in the U. S. National Herbarium no. 1,611,713. Collected in Ofer (Ophir) Hollow, Liberty Township, Jackson Co., Ohio, Aug. 1, 1934, by *Floyd Bartley* and *Leslie L. Pontius*. A second collection from the same locality bears the data, "Top of dry cliff in Ophir Hollow."

portant characteristics are as if taken from the description already given of *C. Porteri* and indicate not much relation to *C. Pickeringii*, as first believed. This collection from Ohio shows us in what directions the limits of the geographical distribution of *C. Porteri* should be sought.

C. PERPLEXA Scribn., U. S. Dept. Agr., Div. Agrost. Circ. **30**: 7. 1901. Based on *C. nemoralis* Kearney, 1898, not *C. nemoralis* Phil., 1896. Ithaca, N. Y., *Dudley* in 1864.

A brief description of the typical material of *C. perplexa* is necessary to the firm establishment of *C. Lepageana*. The Dudley type was collected at Danby,[1] Tompkins Co., N. Y., Aug. 5, 1884. On the label, we read the following ecological note: "High hill. West Danby . . . in dry woods of Rock Oaks, Hickories, with *Ceanothus*, *Vacc. stamineum*, etc. Culms scattered. Two tufts of hairs at base of blade of leaf, thus appr. *C. Porteri* Gr. Panicle pale, branches appressed." On a secondary label, W. J. Beal has written: "C. Porteri, florets rather small"; on the sheet, in Kearney's hand there is "*C. nemoralis* n. sp. (T. H. K. jr.)" and in Fernald's "*C. perplexa* Scribn." K. M. Wiegand and R. N. Jones recollected this very rare species in 1917 at Danby, which is near Cornell University; the label gives "dry woods, Thatcher's Pinnacle", no. 7544.[2]

The Danby plant is smaller in all its parts than typical *C. Porteri*, in spite of the misleading description in Hitchcock's Manual of Grasses (1935): "Resembling *C. Porteri*, differing in the somewhat larger, denser panicle." Its scattered culms are 65–104 cm. high, with a panicle 10 cm. long but shortly exserted (4–12 cm.); the spikelet ranges from 3.3 to 4.4 mm. long; the prolongation of the rachilla is much shorter (0.4 mm. long) and thinner than in *C. Porteri* and *C. Lepageana;* the hair on the callus is longer and more abundant than in Porter's grass.

C. **Fernaldii,** n. sp. A *Calamagrosti perplexa* differt in partibus suis vegetativis, quae quadam affinitate cum *C. Pickeringii* gaudent. Planta caespitosa vel subcaespitosa, 20–88 cm. alta;

[1] For more detailed notes on *C. perplexa* from Danby, see Dudley's Cayuga Flora (1886); Rept. N. Y. State Mus. **41**: 58, 1888; U. S. Dept. Agr. Bull. **11**: 26, 1898 and Circ. **30**: 7, 1901.

[2] W. R. Dudley, on the label of his type collection (1884), had a manuscript name which, two years later, in his Flora, he dropped for *C. Porteri*. In 1898, Kearney published his new species *C. nemoralis*, not noticing that Philippi, in 1896, had used *C. nemoralis* for a South American species. Lamson-Scribner, in U. S. Dept. Agr. Circular **30**: 7, 1901, replaced it by the very appropriate *C. perplexa*.

foliis culmi tribus, longis et erectis; *panicula* 6–9 cm. longa. A *Calamagrosti Pickeringii* differt aliunde in *spiculis*, quae contrario similes his *C. perplexae* apparent, cum *glumis* 3–3.7 mm. longis; *lemmate* 3 mm. longo, aristato prope (0.5 mm.) basin, arista 2 mm. longa, in medio geniculata et mediocriter torta; *palea* 2.5 mm. longa; *pilis calli* numerosis, 2–2.5 mm. longis; pilis rachillae paleam aequantibus. MAINE, Piscataquis Co., Boarstone Mt., alt. 1800 ft., Elliottsville, Aug. 16, 1895, *M. L. Fernald*, no. 427 (TYPE in the Gray Herbarium).

The type collection was found in the Gray Herbarium under *C. perplexa.* It is *M. L. Fernald*, no. 427 from Maine. The label was printed *Calamagrostis Porteri* Gray, and on one of the two sheets of this number present in the Gray Herbarium, there is "fide Scribner"; on the sheet, Kearney has written "*C. nemoralis* n. sp." The plant is certainly baffling. Following Kearney's identification, Fernald puts this collection in *C. perplexa*, but always admitting it as not identical. Scribner had assimilated it with *C. Porteri*, undoubtedly as a "pis aller", and before the publication of *C. nemoralis* Kearney. About this plant Wiegand and Eames took a very different position. In their Flora of the Cayuga Lake Basin, they wrote, under *C. perplexa:* "Dry rocky woods, on subneutral sandstone residual soils; very rare. July–Aug. N.w crest and slope of Thatcher Pinnacles, Danby (D. !). Reported elsewhere only from Piscataquis Co., Maine, but an inspection of that plant shows it to be not the same, and more like an offshoot of *C. Pickeringii.* The Danby plant is related to *C. Porteri.*"[1] In general habit the Piscataquis County plant looks like *C. Pickeringii*, var. *debilis*, but inside its spikelets there is the abundance of hairs that characterizes *C. perplexa.* Nevertheless, it cannot be united to the Danby type, which has "scattered culms" and "two tufts of hairs at the base of the leaf"; it is cespitose and has no tufts of hairs at the summit of its sheaths.

In Hitchcock's Manual of Grasses (1935), three other stations are mentioned under *C. perplexa*, the author having merged in that species the not-often-spoken-of var. *lacustris* of *C. Pickeringii*—Minnesota, Fond du Lac, *F. F. Wood*, 1889 (TYPE of var. *lacustris*); Ontario, Lake Nipigon (both mentioned by Kearney in his revision of American *Calamagrostis*, with others around the

[1] Wiegand, K. M. & A. J. Eames, Flora of the Cayuga Lake Basin. Memoir 92: 75. Cornell University, Ithaca, N. Y., 1925.

Great Lakes)[1]. The last locality indicated by Hitchcock was the White Mountains, New Hampshire. In response to one of my letters to Washington on these extra-typical collections of *C. perplexa*, J. R. Swallen, associate botanist at the U. S. Dept. of Agriculture, sent me a few spikelets of a Mt. Washington specimen, apparently the basis of Hitchcock's citation, with a description and a drawing of the plant. Later on, through the courtesy of Dr. W. R. Maxon, I received the plant itself with a manuscript note of Mrs. Agnes Chase identifying the collector's handwriting. It was impossible to see the type of *Calamagrostis breviseta lacustris* Kearney, which is in hiding for the duration of the war. Luckily we have from the Gray Herbarium good collections of *C. Pickeringii*, var. *lacustris*, from the region of the Great Lakes and elsewhere, one (Isle Royale, Mich., *Porter* 1865) cited as typical by Kearney in his original publication which permits clearing up this case also.

The plant of Mount Washington (Lake of the Clouds, New Hampshire, collected by *William Boott*, Sept. 8, 1862) remained for a long time without specific name. On the herbarium sheet I find a label in pencil in the lower left corner on which W. Boott wrote the locality and the date of his collection; a second one, "Ex Herb. Gray", is in Dr. B. L. Robinson's script; a third, "Ex Herb. William Boott", bears in F. T. Hubbard's script *Calamagrostis Pickeringii* Gray; on the sheet A. S. Hitchcock added *C. perplexa* in pencil.

This extraordinary plant of William Boott from Mt. Washington being undoubtedly specifically distinct from all that I had studied before, an eloquent diagnosis in latin was rapidly written down and a new item *Calamagrostis nubila*, "from the clouds", inserted in my key. This addition was sent with great relief to Prof. Fernald, editor of Rhodora, who immediately poured a bit of cold water on my enthusiasm, by pointing out that the type collection of *C. Pickeringii* was equally from Mount Washington and probably from the alpine Lake of the Clouds itself. At first, I must confess, I did not like this news! He advised me, and very wisely, to complete the revision of this small group of *Calamagrostis* with twisted and geniculate awns, by studying all

[1] Kearney, Thomas H., Jr.—A revision of the North American species of Calamagrostis. U. S. Dept. Agr. Bull. 11: 7–42. 1898.

the material present in the Gray and the New England Botanical Club Herbaria of the *C. Pickeringii* complex, type and varieties. And so I did, with great satisfaction finally.

After going attentively over 152 collections of *C. Pickeringii*, or thus identified (that is, some 460 inflorescences and the rest), after noting down many observations on the variability of the vegetative characters of this polymorphous species (Fernald and Wiegand in a note on *C. Pickeringii*, var. *debilis*[1] made a similar remark), especially of the underground stock, of its rhizomal or tufting habits, I am more than ever convinced that it is possible to segregate the specific entities here involved only by taking into account the general habit and by distinguishing between long or short, abundant or scant callus-hair. The disposition of the hairs on the callus—what we may call *their pattern*, a highly constant feature,—seems most satisfactory and should be taken as the primordial character, since it assures us of a better understanding of the group.

The length of the callus-hairs, as everybody knows, is an outstanding trait in the subsection *Orthoatherae* of the genus *Calamagrostis* and so it is among the Ancylatheran species now under consideration. But in this last difficult group, as we just wrote, the clarification of the different specific types cannot be done safely if we do not go further and study the easily separable patterns of pilosity characterizing the extra-floral callus. The quality of the rachillar hairs may be studied later on, if necessary. If we compare the eastern North American species of *Calamagrostis* with geniculate twisted awns, we can readily segregate and distribute them into a continuous series, running from *C. Pickeringii* through *C. lacustris*, *C. Porteri* and *C. perplexa*, *C. purpurascens* and *C. Lepageana*, n. sp., to *C. nubila*, n. sp., of Mt. Washington (Plate 836, figs. 1–4).

The first species, *C. Pickeringii* (fig. 1), has no hairs on the front of the callus (under the median nerve of the lemma) and only two rudimentary tufts on the sides, occasionally turned in the direction of the rachilla, of very short hairs, 1 mm. long or less, perfectly drawn in Hitchcock's Manual, p. 314, fig. 627.

In a second pattern (fig. 2) the lateral tufts of hairs are long and strong, reaching ⅔ to ¾ of the lemma, still leaving a gap

[1] Fernald, M. L. & K. M. Wiegand, Rhodora 15: 135–136, 1913.

between them on the frontal callus where there is no hair, as in typical *C. lacustris*, as met on the lowlands of the Great Lakes region and in Newfoundland. The hairless gap is still well marked in *C. Porteri*, the long hairs of the lateral tufts being few. In *C. perplexa*, on the contrary, the frontal gap is much reduced by the spreading of the strong lateral tufts; the same disposition is met ordinarily in the alpine collections classified up to date under *C. Pickeringii*, var. *lacustris* or var. *debilis*, and under *C. perplexa; Fernald* no. 425 belongs to this type (FIG. 2).

In a third pattern of callus-pilosity, the two lateral tufts are present: short in *C. purpurascens*, long in *C. Lepageana*, but uniting the two tufts there is a string of shorter hairs running across the frontal callus (FIG. 3); here again the affinity of these two last species seems apparent.

At the other end of the series, in a fourth pattern, stands quite alone *C. nubila*, having no lateral tufts but a veil of long (3–4 mm.) hairs evenly distributed all around the lemma, the longer reaching the tip of the floret (FIG. 4).

These four patterns of callus-hair should suffice for the time being to solve our immediate problems. Later on, with abundant and representative material, especially in what we call to-day *C. Porteri*, *C. lacustris*, *C. perplexa* and *C. nubila*, other patterns of pilosity may fall in line and demand recognition. Experimental taxonomy would find a marvelous field for testing critical species in the genus *Calamagrostis*, especially in the subsection of western and eastern entities with geniculate twisted awn.

C. PICKERINGII A. Gray, Man. ed. 2, 547. 1856. White Mountains, N. H., *Pickering* (TYPE in the Gray Herbarium). *C. sylvatica* var. *breviseta* A. Gray, Man. 582, 1848. *Deyeuxia Pickeringii* Vasey, Grasses U. S. 28, 1883. *C. breviseta* Scribn. Mem. Torr. Bot. Club **5:** 41. 1894.

So I come back to the type of *C. Pickeringii*, collected in Sept., 1842, in the White Mountains and originally named on the label *C. sylvatica;* it is a coarse plant, the spikelets examined ranging from 3.8 mm. long to 4.2 mm. On the same herbarium sheet is a second collection from Herb. Oakes with a printed label: *Calamagrostis sylvatica*, L. Var. *breviseta*, Gray, Manual, ed. 1. Alpine Regions, White Mountains, New Hampshire.

Asa Gray has written on it "*C. Pickeringii*, Gray." The first collection, that mentioned in the Manual, is the type. *C. sylvatica* is a very different European species, much nearer to the western American *C. rubescens*, to *C. purpurascens* and to *C. Lepageana* than to the present species, which has very little callus-hair. The alpine regions of Mount Washington have been visited by several botanists who have collected *Calamagrostis* on their way up or at the Lake of the Clouds. Edwin and Charles E. Faxon seem to have specialized on this high mountain and on *C. Pickeringii*. On Sept. 1, 1877, in Oakes Gulf, they collected typical material and var. *debilis*. On Sept. 2, 1877, at Grand Gulf, they collected a plant very heard to classify if we do not look at the callus-hair pattern; on its three labels are written *C. stricta*, *C. neglecta* and *C. Pickeringii*, var. *debilis*. On August 28, 1882, the Faxons are back in Oakes Gulf; on Sept. 4, 1885, they are at the Lake of the Clouds; on August 29, 1890, at the "Head of Oakes Gulf". At the same time, maybe in the company of the Faxons, C. G. Pringle went up "the wet slopes of the White Mts., Aug. 29, 1877", and probably to the Grand Gulf of Mt. Washington on Sept. 2, 1877, where he collected the same critical plant found by the Faxons on the same day! On its label, I find the same uneasy determination three times different: *C. stricta, C. Pickeringii* and in pencil "too old,—perhaps referable to *C. neglecta*". The spikelets are in full fruit surrounded by long silky hairs, easier to see since half of the glumes have been disarticulated or torn off by dissecting needles. This shedding of the glumes and the prudent "too old, perhaps" is a sufficient proof of the unorthodoxy of this mutant.

Several other botanists climbed also to Lake of the Clouds, Geo. G. Kennedy (1891), B. L. Robinson (1901), W. W. Eggleston (1901), A. S. Hitchcock (1917), Paul Standley and E. P. Killip (1921), etc., but they collected only *C. Pickeringii*, more or less typical. In some of the Faxon collections (Sept. 1877, 1882 and 1885) from Mt. Washington, the last one exactly from Lake of the Clouds, the lateral tufts of hairs are not so stiff and so reduced as in the type and are more spreading along the lateral nerves of the lemma.

After a careful study of the principal collections made on Mt. Washington, at Lake of the Clouds and nearby, one thing is

absolutely clear, I think: the type of *C. Pickeringii,* with two rudimentary tufts of callus-hairs, and the plant (*W. Boott,* Sept. 8, 1862), chosen as the type of the new species *C. nubila,* with its long hairs evenly distributed on its callus, are two extremes which strikingly differ from all the other species between them. This last species, here described, is phylogenetically important, making the bridge, with its well geniculate twisted awn and its diffuse velum of covering hairs, between the subsections *Orthoatherae* and *Ancylatherae* of the genus *Calamagrostis.*

Kearney in his revision of *Calamagrostis* mentioned few abnormalities; but these are always of genetical interest. Before putting aside the abundant material of *C. Pickeringii* sent to me, we may note the occurrence of a rachilla having hairs only towards the tip, somewhat as in *C. cinnoides.* In one case, the rachilla was transformed into a normal awn; in another, the caryopsis was transformed by smut into a spur. Finally, a viviparous specimen:

C. Pickeringii, forma **vivipara,** n. forma. Spiculis viviparis. Having viviparous spikelets. Nova Scotia: Digby Co., wet savannahs along Little River east of Tiddville, Aug. 22, 1920, *Fernald & Long,* no. 19924 (type in the Gray Herbarium).

Calamagrostis **nubila,** n. sp. (Tab. 836 et fig. 4) Species caespitosa, culmis erectis et validis, 55 cm. longis; *lamina* folii 12–18 cm. longa, 5 mm. lata et, sicut pars exserta culmi et ramorum inflorescentiae, scabra; vagina folii ad os nullo modo pilifera; *panicula* 13 cm. longa, dense florifera, ramulis longioribus et inferioribus flexuosis, 5 cm. longis; *spiculis* valde uniformibus, puberulentibus; gluma I 5.2 mm. longa in nervo medio perscabra, gluma II 5 mm. longa, trinervata; lemmate membranaceo, 4.2 mm. longo, distincte nervato in apice acuminato dentatoque; *palea* 3 mm. longa, hyalina, angusta et ad apicem emarginata; *antheris* 2 mm. longis et 0.3 mm. latis; *arista* 3 mm. longa, lemma subaequante, geniculata et mediocriter torta; *pilis calli* 3–4 mm. longis et numerosis, nascentibus aequali modo circum totam lemmatis basim eamque perfecte velantibus; *pilis rachillae* 2 mm. longis tantum.—Caespitose species, with erect culms 55 cm. high; leaves firm and scabrous, with blades 12–18 cm. long and 5 mm. wide, the ligule 5 mm. long; the summit of the sheath without a tuft of hairs; panicle 13 cm. long, densely flowered, with long spreading flexuous branches, the lower ones 5 cm. long; spikelets remarkably uniform, puberulent, with glumes 5.2 and 5 mm. long, perscabrous on the median nerve; *lemma,* 4.2 mm. long,

membranaceous and distinctly nerved, at the apex acuminate and dentate; *palea* 3 mm. long, hyaline and narrow, emarginate at the tip; anthers 2 mm. long and 0.3 mm. broad; the awn 3 mm. long, equalling the lemma or nearly so, geniculate and weakly twisted; hairs on the callus 3–4 mm. long, very numerous, may be a hundred, and evenly distributed all around the lemma, veiling it to the summit, the hair on the rachilla shorter and 2 mm. long.—New Hampshire: Mount Washington, Lake of the Clouds, *William Boott*, Sept. 8, 1862 (type in U. S. National Herbarium, no. 907166).

With the same general pattern of callus-pilosity—long hairs all around the lemma without distinct lateral tufts—the following collections, perhaps deserving at least a varietal rank, may be placed here until more material is available for study: New Hampshire, Mt. Washington, Grand Gulf, *E. Faxon*, Sept. 2, 1877, and at the same station and the same date *C. G. Pringle*. The four plants of these two sheets, probably collected together, are somewhat starved; culms weak, 30–40 cm. high, with panicles 5–6 cm. long, the spikelets 3.5 to 4 mm. long, their lemma and palea subequal, well surrounded by long stiff hairs, these less numerous than in typical *C. nubila*. The base of the culm is also strongly geniculate here and apparently not in the William Boott plant. Another collection of Edwin Faxon, from Mount Willard, New Hampshire, July, 1875, labeled *C. hyperborea*, *C. stricta* and *C. Pickeringii*, var. *debilis*, has also long hairs on the front and sides of the callus. In some spikelets the hairs seem to form a continuous velum but in some others they seem to represent three tufts: two lateral and one frontal! Kearney, after having cited this collection among the plants he classed in his *C. breviseta*, var. *lacustris*, was forced to admit that it was a bad match with the specimens from Fond du Lac, Minnesota, and from Isle Royale, Michigan. In fact, it cannot go with *C. breviseta* because its *setae* are long; it cannot go with *C. Porteri* or *C. perplexa* because it has well developed hairs on the front of the callus. This Mt. Willard plant is a good match for the *Pease* collections (nos. 11695, 11696) from Mt. Crawford, New Hampshire, labeled *C. neglecta* by the collector and *C. Pickeringii*, var. *debilis* by G. L. Stebbins. They do not belong to the subsection *Ancylatherae* and are much nearer *C. inexpansa* than anything else. A last number I find in the Gray Herbarium material of *C. Pickeringii* is a very interesting plant with abundant long

white hairs on its callus, found by *Bayard Long and D. H. Linder* on "wet sphagnous swale at border of Beaver Lake, Yarmouth Co., Nova Scotia, July 25, 1920" (no. 19918). In F. T. Hubbard's delicate script we read on the sheet: "Note long callus-hairs". We may note at the same time that the culm is strictly erect, branching from the first, second and fourth nodes from the ground, the three superior nodes bearing three leaves like the sterile shoots; that the awn is perfectly straight and that the very short (2 mm. long) truncate ligule is of a sort found only, with the rest, in *C. neglecta*, that border species of the subsection *Orthoatherae!*

C. LACUSTRIS (Kearney) Nash, in Britt. and Brown, Illust. Fl. ed. 2. **1**: 208. 1913. Based on *C. breviseta*, var. *lacustris* Kearney (1898). Fond du Lac, Minn., *Wood*, 1889 (TYPE in the U. S. Nat. Herbarium). *C. Pickeringii*, var. *lacustris* Hitchc. (1906).

In the specimens of *C. Pickeringii* received there is still another lot with lateral tufts of long callus-hairs, the material of the var. *lacustris*, which Hitchcock in his Manual of Grasses has simply transferred, with *Fernald* no. 427, to *C. perplexa*. Thomas H. Kearney in his description of "*C. breviseta lacustris*, var. n. *C. lapponica* A. Gray, Proc. Am. Acad., 6: 78 (1862) in part", writes: "Sometime stoloniferous; rootstock stouter; culms usually taller (5 to 10 dm. high); . . . palea noticeably shorter than the flowering glume . . . : callus hairs more copious, the longer three-fourths to six-sevenths as long as the flowering glume . . . Type specimen in the United States National Herbarium collected at Fond du Lac, Minn., by F. F. Wood, July 23, 1889." Among the "specimens examined," there is a Thos. C. Porter collection from Isle Royale, Michigan, Aug. 2, 1865, which I have here and on the sheet of which Kearney has written *C. breviseta lacustris* n. var. (T. H. K. Jr.). Gray had originally identified this specimen as *Calamagrostis:* "*Lapponica* L. Manual, Addend., 1868". On a second label, Porter, sticking, as on the label of the type of *C. Porteri*, to a favorite though dubious identification, wrote "*Calamagrostis confinis*, Nutt.—? Perhaps it is a variety of *C. stricta.*" This collection is as defined by Kearney in his diagnosis and is very different from the types of the two species growing on Mt. Washington. Kearney added "The specimens from the region of the Great Lakes are mostly

very distinct, . . . [from] typical *C. breviseta*. Were it not for the occurrence of a few intergrading forms [Mt. Willard plant of *E. Faxon* is one of them] they would be regarded as representing a perfectly distinct species . . . "[1] Since then, several other representative collections have been made at low altitudes: in New Hampshire, Grafton Co., gravelly bank, North Woodstock, valley of the Pemigewasset River, *M. L. Fernald* no. 11542; in the same County at Arethusa Fall, Livermore, *A. S. Pease*, no. 29041, not so typical. NEWFOUNDLAND, along Harry's River, between Bay St. George and Bay of Islands, "Open boggy areas in woods", *M. L. Fernald & K. M. Wiegand*, no. 2545.

UNGAVA; Lac Mistassini, Aug. 10–17, 1943. *Dutilly & Lepage*, no. 11552A, with tufts of long hairs and a distinct gap between; Northern Tesekau Lake, on Marten River, affluent of Rupert River, lat. 51° 10′ and long. w. 76° ?′, rocher granitique. Aug. 1, 1943. *Dutilly & Lepage*, no. 11368. In four other numbers collected last year by Father A. Dutilly and Abbé Ernest Lepage, on Marten River, 11344, 11410, 11432 and 11367A, the vegetative characters and the awn are as in *C. lacustris*, but the type of callus pilosity is dubious.

Now let us turn to *C. Lepageana*, from the Rimouski region, Quebec, Canada, which as we have sufficiently proved, differs from the other eastern North American species. Among the western species only one seems to have some affinity with the Mt. Commis plant to be described: it is *C. rubescens*, the geographical distribution of which, as given in the Hitchcock Manual, is "Open pine woods, prairies and banks, Manitoba to British Columbia, south to northern Colorado and central California. A valuable range grass." The type collection of *C. Lepageana* having been made on a "corniche étroite, au pied d'une muraille du Mt. Commis", I asked Father Lepage to climb to the top, covered with a mixed forest of pine and poplars, of this hill, where more of his *Calamagrostis* should be found. He went and collected, on July 6, 1943, some 169 flowering culms which are to be distributed in the *Plantae Exsiccatae Grayanae*, if numerous enough. The plants of this last collection from the summit of Mt. Commis, in a different habitat, dryer and more exposed to wind and sun,

[1] Kearney, Th. H., Jr. U. S. Dept. Agr. Bull. **11**: 25–26. 1898.

have a tendency to form little tufts of culms, to have less exserted panicles and to develop on their glumes a purplish pigment. But the Lepage *Calamagrostis* remains still very distinct from *C. rubescens*, which is now a huge mixture including the types of the additional following species: *C. Cusickii* (Oregon), *C. Suksdorfii* (Washington), *C. aleutica angusta* (Santa Cruz, California), *C. subflexuosa* (Oakland, Calif.), *C. fasciculata* (Mendocino Co., Calif.), *C. Suksdorfii luxurians* (Idaho). A. S. Hitchcock ended his list of synonyms by the remark: "This species has been referred by some American authors to *C. sylvatica* DC., and *Deyeuxia varia* Kunth." To complete the course, we may add that *C. Pickeringii* has also been referred to *C. sylvatica*, which in turn is thrown by European botanists into the synonymy of *C. varia*.

In a preliminary note, addressed to Prof. Fernald last February, I tried to establish the relations existing between *C. Lepageana* and six related species: *C. purpurascens*, *C. rubescens*, *C. Cusickii*, *C. Porteri*, *C. perplexa* and *C. varia*, mainly by comparing their descriptions in different Floras. Under *C. rubescens*, I wrote: ". . . sheath with pubescent collar (as in *C. Porteri* and in *C. perplexa*); awn short, included or protruding at the side of the glumes, not at their tip (in *C. Lepageana*, the awn protrudes at the tip of the spikelet): callus-hairs scant (now we know the importance of the pilosity-pattern); the culms described as tufted, 60 to 100 cm. tall . . . " "*C. Cusickii* Vasey is a large form of *C. rubescens* with lobed inflorescence . . . . In Hitchcock, Abrams and Rydberg Floras, I find no other near species . . . " Under *C. varia* Host, "This European species is very variable: one specimen, in our herbarium, from Lugano, San Salvador (Flora der Schweiz) VII, 1910, *A. R. Paul* leg., has a spikelet nearer to that of the Mt. Commis plant than to any of the American species studied. But other collections of the European *C. varia* (*C. sylvatica*), from Weissenbach, Tirol, *Trepferi*, from Brandenburg, *O. Weder*, etc., are completely different from the Lepage *Calamagrostis*."

It is impossible to examine the numerous types included in the complex *C. rubescens*, but by the great size of this "valuable range grass", 60–100 cm. high and more, we can infer that its culms have more than two cauline leaves; the specimens I have

Habit: Calamagrostis nubila

Figs. 1–4, different patterns of callus-pilosity

Calamagrostis Lepageana

seen of *C. Suksdorfii*, put by Kearney and Hitchcock in *C. rubescens*, were coarse, fleshy and three-leaved. The drawings in Hitchcock's Manual (fig. 618) of a *C. rubescens* spikelet with the equal glumes, with the lemma not strongly dentate and the palea fairly equal, are not like those of *C. Lepageana.*

Nobody could find, even after a thorough study, great affinity between *C. Pickeringii*, growing generally in tufts and including in its purplish spikelets a very short awn with very small hairs, and *Calamagrostis Lepageana*, from Rimouski County, Quebec, named after Father Ernest Lepage who found the plant.[1] The two species, having different geographical ranges, differ also in organization, as the following parallel will show:

	C. Porteri	C. perplexa	C. Lepageana	C. Pickeringii (typical)
culm	89–130 cm.	65–100 cm.	30–65 cm.	30–60 cm. high
habit	scattered	scattered	scattered	tufting or loosely stoloniferous
cauline leaves	4	4	2	3
mouth of sheaths	pubescent	pubescent	glabrous	glabrous
spikelet	4.5–5.5 mm.	3.3–4.4 mm.	4–4.6 mm.	3.8–4.8 mm. long
color	green	green	mostly green	purplish
panicle	11–22 cm.	9.6–10.5 cm.	6.6–9.2 cm.	6–12 cm. long
exsertion	long	very short	long	short
lemma	4–5 mm.	3.2–3.6 mm.	3–4 mm.	2.8–3 mm. long
awn	3 mm.	2 mm.	5 mm.	2–3 mm. long
hair-pattern	II (scant)	II (abundant)	III	I
rachilla	thick	filiform	capitate	thick
caryopsis	red	red	green	red

As one can see, Porter's, Dudley's and Pickering's Calamagrostis differ greatly morphologically from the Lepage plant, usually 50 cm. high, wiry, its culm being hardly 1 mm. in diameter under the stiff branched panicle. The type collection had scattering rhizomes; but the abundant 1943 material, from the top of Mt. Commis, in different habitat, grew often in little tufts, like *C. Pickeringii* and others. The old sheaths are marcescent and the young shoots have very long (10–20 cm.) and narrow blades, puberulent on their upper face; the leaves of the stem are only two—another character of *C. purpurascens*—one, towards the middle, 7–9 cm. long and only 1–2.5 mm. wide,

[1] The bulk of the type collection, some six sheets, had been sent at first to Washington, where J. R. Swallen recognized immediately the originality of the plant. Just one sheet had been addressed to the University of Montreal and one to the Oka College. Learning that I intended to make a *C. Lepageana* of this plant, Mr. Swallen was good enough to let me have all the material and to work out the problem.

involute at the tip, the other, near the ground, broader but not much longer than the superior one; the ligule, 2 mm. long, is delicate and emarginate. The distribution of the different species, taken in parallel, is geographically on a line going from the Arctic regions to Mt. Commis, to Mt. Washington and the Thatcher Pinnacle, to the more southern Warrior Mts., in the Pennsylvania Blue Ridge. We find *C. Pickeringii* and *C. lacustris* up to Newfoundland, but, so far as I know, they never have been collected in the province of Quebec, at least in the smaller Quebec, excluding the enormous Ungava still lying down like a sphinx before us. Professor Wiegand, a few months before his death, sent me a list of Dr. G. Gardner's collections from Grady Island, Labrador, where I find one number (89) identified as *C. Pickeringii*. This would be the most northern station of this species and the only one in Quebec. But this record must be considered as doubtful; the specimen of Gardner 89 which I received is *C. neglecta*.

To me, the nearest species, morphologically, to the Mt. Commis new type seems to be *C. purpurascens*, which also has two cauline leaves, puberulent on the upper surface; a long awn surpassing the tip of the spikelet and very strong; and, finally, the same dentate-emarginate summit of the lemma with nerves becoming progressively prominent, going up, and the same bidentate hyaline palea. This last and arctic representative of the group with twisted awn had the queer fancy, moreover, to come down and live on the surprising cliffs of Bic, barely ten miles from Rimouski and Mt. Commis. Nevertheless, the following comparison shows that the two species differ sufficiently:

	C. PURPURASCENS	C. LEPAGEANA
spikelet	dark purple	green
length	5–12 mm.	4–4.6 mm.
awn (typical)	6–7.2 mm. long	4–5 mm. long
callus-hairs	III (shorter)	III (longer)
caryopsis	red	olive-green

In the *C. Pickeringii* complex, *C. lacustris*, *C. perplexa* (sensu Hitchcock) and *C. nubila* may look much like the type, in their general habit; the essential difference between them must be sought in their spikelets, in their geographical distribution and their ecological exigencies. Between *C. Lepageana* and *C. pur-*

purascens the main difference which separates them at first sight is their general habit: arctic xerophyte versus temperate mesophyte. The different stations where *C. Lepageana* was found at Mt. Commis are all calcareous.

From the precious notes furnished by Father Ernest Lepage, the habitat may be properly described. The type locality, Mont-Commis, is in St. Donat, Rimouski Co., 8 miles from the St. Lawrence River, in longitude 68° 11′ 18″ west, latitude 48° 27′ 26″ north, in the Appalache Mt. system, altitude 2600 feet. Mt. Commis by itself is only 500–600 ft. high. The new *Calamagrostis* was found on the north side of this hill, under a perpendicular wall of sandstone and calcareous conglomerates of Silurian age; this fault-escarpment is well marked by the abundant brachyopod *Conchidium Knightii* Sowerby. A mixed forest covers the top of Mt. Commis, but not densely so; in the grass association, rather heliophilous, carpeting this very light forest of the pinus-populus type, *C. Lepageana* grows freely. On the perpendicular wall cling beautifully *Aquilegia canadensis*, *Asplenium viride* and *Woodsia alpina*. Under the escarpment runs a shelf, three feet broad, on which the type of *C. Lepageana*. was found in July 2, 1942, with *Botrychium matricariaefolium*, *Carex eburnea* and *C. concinna*, and undoubtedly fallen from above. Bordering the cornice on the talus below, is a formation of *Salix humilis*, *Acer spicatum* and *Cornus rugosa*, underneath which grow *Polystichum Lonchitis*, *Actaea pachypoda*, *A. rubra* and its var. *neglecta*. The lower part of the slope is covered with *Draba arabisans* and the red *Aquilegia*. Stepping into the forest down Mt. Commis, we meet *Polystichum Braunii*, var. *Purshii*, *Athyrium thelypterioides*, etc.

Calamagrostis **Lepageana,** n. sp. (Tab. 837). Gramen perenne, rhizomatibus (diam. 1.5–2 mm.) satis fragilibus; *culmo* perfecte glabro, 30–65 cm. alto, tenui, diametro vix 1 mm. sub inflorescentia (10–20 cm. longa) exserta; *foliis* annorum praeteritorum ut vaginis marcescentibus praesentibus, novis in pagina superiore puberulentibus subtus et in vagina perglabris, caulinis duobus vel aliquando solis, supremo sub panicula 7–9 cm. longum, 2–4 mm. latum; foliis innovationum sterilium longioribus (10–20 cm.); *ligula* emarginata, 2 mm. longa; *panicula* ellipsoidea, densa, 6.6–9.2 cm. longa, 0.6–1 cm. lata; *spicula* (e medio paniculae), cum *gluma* I uninervia, 4–4.6 mm. longa, 1.4–1.6 mm. lata, *gluma* II trinervia, 3.5–4.2 mm. longa, 1.2–

1.4 mm. lata; *lemmate* 3–4 mm. longo, apice emarginato et valde dentato, nervis in parte superiore paulatim distinctioribus et purpurascentibus; *arista* geniculata et infra torta, 5 mm. longa, inserta prope (0.6 mm.) basim lemmatis, cujus apicem 2–2.5 mm., eum glumae longioris 1.5 mm. superante; *palea* hyalina et bidentata, 2.8–3.6 mm. longa; rachillae prolongatione 1.2–1.5 mm. longa capitata et longe pilosa; *callo* sub dimidio lemmatis piloso, lateribus cristis binis pilorum longiorum (2 mm.) ornato; *anthera* 1.8 mm. longa et 0.2 mm. lata; *caryopsi* viridi, 2 mm. longa.—Quebec: Mont-Commis, near St. Donat, Rimouski Co., alt. ca. 2600 feet, growing on two narrow cornices, in association with *Botrychium matricariaefolium*, *Carex eburnea* and *C. concinna*, *Father Ernest Lepage* (no. 3400), July 2, 1942, type in the Gray Herbarium, isotypes sent to the National Herbarium of Canada (3400a), Nat. Herbarium of U. S. A. (3400b), University of Montreal (3400c), Université Laval (3400d), Herbarium of Father Ernest Lepage (3400e) and to the Herbarium of the Oka Institute (3400f).

CONCLUSION

In this rather long study of a difficult group of *Calamagrostis* special attention has been given to the callus-pilosity which permits, with the other data, an easier and a more natural segregation of the species. These callus-hairs may be very long, numerous and evenly distributed around the lemma, as in *C. nubila;* they may be long and in two lateral abundant tufts, as in the umbrophilous *C. Fernaldii* (Sugar Maple-boreal Oak-Tilia forest) and *C. perplexa* (Hickory-Rock Oak-Ceanothus forest); they are short and less abundant in *C. Porteri* (including *C. insperata*). In the circumboreal arctic and surbarctic *C. purpurascens* and in the temperate *C. Lepageana* there is a great reduction of all the callus-hairs, but none are suppressed; between the tufts a string of very short (1 mm. or less) hairs is maintained. In *C. Pickeringii* the frontal callus is glabrous and the lateral tufts are rudimentary, while in *C. lacustris* they are much longer, though still separated by a distinct hairless gap.

The western American species of *Calamagrostis* with twisted and geniculate awns, especially those of the *C. rubescens* complex, should be studied with these patterns of extra-floral pilosity in mind. A. E. Porsild sent me recently some 145 sheets from the National Herbarium of Canada, mostly of western North American species (subsect. *Ancylatherae*). Under one cover of

C. rubescens I found at least two specific types showing different associations of characters and different patterns of callus-pilosity. In *C. Suksdorfii* Scribn. there is the long awn of *C. Lepageana*, but the tip of the lemma is not dentate-emarginate, the callus-hairs are as in *C. Pickeringii* and the mouth of the sheaths is pubescent as in *C. Porteri!* In *C. montanensis* Scribn. the hairs of the callus are abundant, about half as long as the lemma and evenly distributed around the back of the lemma. But all this is another story.

KEY TO EASTERN NORTH AMERICAN SPECIES OF CALAMAGROSTIS, SUBSECTION ANCYLATHERAE

a. Awn longer than the glumes and protruding at the tip of the spikelet; summit of the lemma and palea emarginate-dentate; flowering stems with 1–2 cauline leaves; callus-hairs of pattern III....*b.*
  b. Spikelet purple, 5.5–12 mm. long; lemma bearing an awn 5–10 mm. long; caryopsis reddish.....1. *C. purpurascens.*
  b. Spikelet mostly green, 4–4.6 mm. long; lemma 3–4 mm. long, bearing an awn 4–5 mm. long; caryopsis olive-green.....2. *C. Lepageana.*
a. Awn shorter than the glumes and sometimes protruding at the side of the spikelet; summit of the lemma and palea more or less truncate-emarginate, but not dentate; flowering stems with 3–4 cauline leaves; callus-pilosity of patterns I, II and IV....*c.*
  c. Summit of sheaths glabrous; culms usually tufted and spikelets purplish; cauline leaves 3....*d.*
    d. Callus-hairs in two lateral tufts, the front of the callus hairless; awn short, weakly geniculate and twisted....*e.*
      e. Callus-hairs scant and short, in rudimentary lateral tufts (pattern I).
        Plant coarse; spikelets 3.8–5 mm. long.....3. *C. Pickeringii.*
        Plant more delicate; spikelets 2–3.6 mm. long....3a. var. *debilis.*
      e. Callus-hairs abundant and long, in distinct lateral tufts (pattern II).
        Coarse plant of low altitude, with long and stout rhizome.....4. *C. lacustris.*
        Plant 15–60 cm. high, of mountainous and deciduous forest, on short and tufting rhizome.....5. *C. Fernaldii.*
    d. Callus-hairs very long (3–4 mm.) and numerous, forming no lateral tufts, but evenly distributed around the lemma (pattern IV); spikelets 5–5.2 mm. long.....6. *C. nubila.*
  c. Summit of sheaths pubescent; culms scattered; spikelet green; callus-hairs with tufts (pattern II); cauline leaves generally 4.
    Lateral callus-hairs abundant, 2–3 mm. long; panicle 9–10 cm. long, short-exserted; spikelet 4 mm. long..7. *C. perplexa.*
    Lateral callus-hairs few; panicle 11–22 cm. long and long-exserted (14–28 cm.); spikelet 5 mm. long.....8. *C. Porteri.*

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A NEW SPECIES OF HOUSTONIA FROM THE CEDAR BARRENS OF LEE COUNTY, VIRGINIA

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In the Cedar Barrens or Glades of Lee County, Virginia, a few miles southwest of Jonesville, a new species of *Houstonia* has been found. Its description is being presented in this paper. Visits to the barrens in course of phytogeographic fieldwork during 1942 have resulted in the discovery of a number of uniquely interesting finds.[1]

The area is an extension of the Great Valley Physiographic Province,[2] merging into the Cumberland Escarpment,[3] revealing conspicuous exposures of upper Ordovician limestone (Stone's River Group) throughout the barrens. Huge cedars compose the dominant tree-growth, and springs rise here and there.

Gattinger's description[4] of the barrens of Tennessee is fitting here for in some measure the two areas parallel each other in geological aspect and richness in floral rarities.

"Where the soil thins out, leaving here and there the rock exposed, or where from the collapse of subterranean cavities the strata are tumbled about in confusion and earth and humus irregularly distributed, there the heavier timber growth gives out, and the cedar is the predominant growth. Its far-searching roots descend into the crevices and cavities of the age-worn rock. The somber tint of the cedar delineates a cedar barren from its surroundings at a distance, and serves within its environs to bring out with dazzling vividness the beautiful green of the glade grass, aglow with rose-colored petalestemons, sky-blue lobelias, golden Leavenworthias, Schoenoliriums and shrubby hypericums. The pink stonecrop, *Sedum pulchellum*, covers acres of surface yielding again to equal profusion of the delicate white Arenaria (*Arenaria patula*), or a low, purple-flowered skullcap (*Scutellaria nervosa*). The *Talinum teretifolium*, span high, with fleshy leaves like a portulaca, the flower resembling the bloom of a phlox, but of the purest carmine, finds room for its tuberous rootlets in the smallest fissures. It will bear transplanting even while flowering, and grows well in the garden. Cream-colored and blue astragals (*Astragalus Plattensis* and *Astragalus caryocarpus*), and a purple, large-flowered, and prostrate psoralea (*Psoralea subacaulis*), phacelias, the blue false indigo (*Baptisia australis*), bluets, and the Carolina anemone (*Houstonia patens, Anemone Caroliniana*), verbenas, violets (especially the pansylike *Viola pedata* var. *bicolor*), the dwarf heliotrope (*Heliotropium tenellum*),

[1] Fuller details are to be found in the writer's doctoral thesis.

[2] Fenneman, Nevin M., Physiography of the Eastern United States. 1938. Plates 2 and 3.

[3] Butts, Charles, Geology of the Appalachian Valley in Virginia. Part 1—Geologic Text and Illustrations. Va. Geological Survey, Bull. 52, 1940. p. 2.

[4] Gattinger, A., The Flora of Tennessee. 1901. Pp. 22–23.

the pale purple *Phlox Stellaria* (which deserves a bed in every garden), and many, many more assemble—a natural conservatory that could fearlessly challenge any flower-garden in the combined effect of gayety and luxuriance. For truth, my honored Tennessee friends, go and see, and learn to appreciate and to preserve such great ornaments of your native land. I cannot dwell longer on this point; suffice it to say that the above are only a few of the most obvious spring flowers, and every succeeding season has its own peculiar growth. The hop tree (*Ptelea trifoliata*), fragrant sumac (*Rhus aromatica*), Carolina buckthorn (*Frangula Caroliniana*), *Forestiera ligustrina*, delightfully fragrant when flowering in July, the Callicarpa, with clusters of rosy flowers and violet berries, and several kinds of hawthorn, are the characteristic shrubs of these barrens. Hackberry, honey locust, winged elm, post oak and shingle oak intermingle in limited numbers with the cedar."

The *Houstonia* has as its associates *Ophioglossum Engelmanni* Prantl, the first recorded for Lee County, *Bouteloua curtipendula* (Michx.) Torr., *Scleria oligantha* Michx., *Agave virginica* L., *Stylophorum diphyllum* (Michx.) Nutt., *Rhamnus caroliniana* Walt., *Opuntia calcicola* Wherry, *Bignonia capreolata* L., *Penstemon calycosus* Small, *Viburnum rufidulum* Raf., *Senecio Millefolium* T. & G. and *Gnaphalium calviceps* Fernald.

A number of these records, which comprise only a partial list, are striking from the standpoint of distribution and rarity, and will be commented on to furnish pictorial impressions with respect to the unique habitat and its flora. Also attention will be given to the endemic or restricted nature of the flora in the Cedar Barrens or Glades of Tennessee. It is interesting to note that both the barrens around Nashville, Tennessee,[1] and those in Lee County, Virginia, lie in the upper Ordovician limestone (Stone's River Group)—thus the expectancy for a correlated type of flora is high. Indeed the Stone's River Group was named from Stone's River in the Nashville Basin of Central Tennessee where the cedar barrens prevail.[2]

Unique types characteristic of the Cedar Glade country of Tennessee are *Lobelia Gattingeri* A. Gray; McVaugh states in his treatment of North American species of *Lobelia*[3] that it is now known only from three counties in the limestone region, barrens and bluffs, of central Tennessee; *Satureja glabella* (Michx.) Briquet according to Svenson[4] apparently confined to limestone

[1] Fenneman, ibid, footnote 2. p. 433.
[2] Butts, ibid, footnote 3. p. 119.
[3] McVaugh, Rogers, Rhodora, **38**, 1936. p. 346.
[4] Svenson, H. K., Rhodora, **42**, 1940. p. 7.

river bluffs and cedar glades in the vicinity of Nashville, Tennessee; *Petalostemon foliosus* A. Gray, "river banks, Interior Low Plateau, Tennessee to Illinois;" *P. Gattingeri* Heller, "rocky calcareous prairies, cedar glades, and grassy hillsides, Interior Low Plateau, Alabama and Tennessee" according to Small[1]; *Leavenworthia torulosa* A. Gray, "moist cedar glades, Interior Low Plateaus, North Alabama, Tennessee and Kentucky," Small[1]; *Psoralea subacaulis* T. & G., "rocky limestone soil, cedar glades, in the Interior Low Plateau, Tennessee," Small[1]; and *Phaceliа Bicknellii* Small, "barren soil, Interior Low Plateaus, Tennessee," Small.[9] The endemic or local nature of the flora of cedar-barren country is evident from these citations, and one has the feeling when exploring in such a habitat that something new is going to turn up. The cedar-glade country of Lee County has never been explored botanically, and the existence of such glades has apparently been unknown to botanists. The area is indeed proving to be a botanical paradise, and as fieldwork proceeds extension of the endemic plants of the barrens of Tennessee into the cedar glades of southwestern Virginia is to be expected.

Of the interesting associates of the endemic *Houstonia*, *Agave virginica* is conspicuous. Search through herbaria reveals that this species has not been collected in Virginia since Clayton first collected it, presumably somewhere in southeastern Virginia, though search there by Fernald and Long has not disclosed its whereabouts. The discovery of *Stylophorum diphyllum*, primarily westward in trend gives us apparently the first record for Virginia. *Penstemon calycosus*, typical of the Interior Lowlands according to Pennell[2], is here reported in Virginia for the first time. *Senecio Millefolium* is now brought into the Gray's Manual range, a rarity which seemingly has not been collected since 1899 and then only in a few localities in the mountains of North Carolina, South Carolina, and Georgia. *Gnaphalium calviceps*, described from southeastern Virginia by Fernald,[3] is present in the cedar glades. Previous to this report it was localized in the former area. It may be seen that one is in an area where the expectancy for new and local things is accentuated.

[1] Small, J. K., Manual of the Southeastern Flora. 1933.

[2] Pennell Francis W. The Scrophulariaceae of Eastern Temperate North America 1935. p. 215.

[3] Fernald, M. L. Rhodora, 37, 1935. pp. 449–50.

Houstonia setiscaphia appears to bring the thought to a reality and is hereby described.

Houstonia **setiscaphia,** sp. nov. Planta cana, ad 1.7 dm. alta; caulis anguli scabrelli, ad caulis basem setis magis evidentibus; folia oblanceolata; inflorescentia compacta; hypanthium setis pellucidis saepius in costis hispidum, calycis lobi setis in costis mediis marginibusque extus hispidi; corolla 4.5–5 mm. longa, ore 2 mm. lato; capsula ca. 2.5 mm. longa.—Virginia: outcroppings of limestone (Stone's River Group) in the Cedar Glades or Barrens, vicinity of Jonesville, Lee County, July 10, 1942, *Lloyd G. Carr*, no. 1110 (type in Herb. Gray.; isotype in Herb. Univ. Penn.).

Houstonia setiscaphia differs from its closest relative, *H. canadensis* Willd. (*H. ciliolata* Torr.) in having its calyx-cup conspicuously adorned with translucent hispid hairs, mostly on the ribs, with the outer face of sepals bearing hispid hairs on midribs and margins. It stands apart from *H. canadensis* also in having angles of stem finely scabrous, the scabrous hairs becoming longer near base of stem. Here it is interesting to note as a contrast that Torrey in his description of *H. ciliolata*[1] points out that the stem is "very smooth on every part." The inflorescence is more densely and compactly flowered. The general aspect of the plant is grayish from the gravish hairs, as opposed to the brownish appearance of *H. canadensis.* The average height of fruiting plants is 6.91 inches, the flowering plant from 4.25 to 5.12 inches while *H. canadensis* is generally much lower, ranging from 2.83 to 6.75 inches according to measurements made from thirteen sheets in the Herbarium of the Academy of Natural Sciences. Both cauline and radical leaves are oblanceolate and not spatulate and ovate as in *H. canadensis.* Late-flowering material shows a corolla-length of 4.5 to 5 mm. with a mouth-spread of around 2 mm., as opposed to a corolla-length ranging from 5.66 to 8 mm. and a mouth-spread ranging from 3 to 4.66 mm. in *H. canadensis.*

I appreciate greatly the assistance of Dr. Francis W. Pennell in drafting the Latin description. I want to thank Professor M. L. Fernald for studying the type-material and verifying the conclusions reached in this paper.

It is a great pleasure to state here that studies were pursued in

[1] Torrey, John. A Flora of the Northern and Middle Sections of the United States. Vol. 1. 1824. pp. 173–4.

completing work for the Ph.D. under the supervision of Dr. John M. Fogg, Jr., during the tenure of Harrison Fellowships in Botany held during the sessions of 1941–42 and 1942–43 at the University of Pennsylvania. Without the contributions made by Mrs. Nellie Carr Brophy, Mrs. Frances Carr Henebry, and Mrs. Mary Carr Butler of Roanoke, Virginia, phases of field work in the southwestern Virginia area would not have been accomplished.

University of Pennsylvania

Two of Rafinesque's Species of Tradescantia.—Dr. Merrill calls to my attention two of Rafinesque's species of *Tradescantia* which seem to deserve a better fate than that accorded them in Anderson & Woodson's *Species of Tradescantia Indigenous in the United States*, Contrib. Arn. Arb. ix. (1935). As a result of study of these two species two names adopted by Anderson & Woodson seem to be clearly antedated by others, one of which should be taken up.

On their p. 75 the monographers maintain *T. canaliculata* Raf. Atl. Journ. i. 150 (1832) for the glabrous species which occurs rather generally through the eastern half of the United States, from Pennsylvania to Minnesota, south to Florida and Texas, and much naturalized farther east. As a synonym they cite *T. ohiensis* Raf. New Flora, ii. 84 (1837—date given by them as 1836[1]), changing the spelling to *Ohioensis*. At the latter date Rafinesque particularly said of his *T. ohiensis:* "described in 1814 from a specimen of Dencke given me by Vanvleck." That should have given a clue, although in 1935 the authors could have found, by consulting Index Kewensis, that *T. ohiensis* was originally published by Rafinesque in his Précis des Découvertes, 45 (1814). For a plant (*T. canaliculata*) of which Anderson & Woodson cite 19 numbers from Ohio, a species essentially glabrous throughout (as compared with the other Ohio species, *T. virginiana*, which the monographers describe as having "sepals . . . uniformly . . . pubescent") the 1814 diagnosis was unequivocal.

[1] Barnhart, quoting letters from Rafinesque to Torrey, shows that the 2nd part did not come out until "1837 (second half)"—See Barnhart, Torreya, vii. 181 (1907).

Tradescantia ohiensis. · Feuilles planes, linéaires, aigues, glabres; involucre multiflore plus long que les fleurs, divisions perigonales glabres. —Obs. Dans l'état de l'Ohio dans l'Amér. Sept. fleurs blanches.

There can be no doubt that *Tradescantia ohiensis* Raf. (1814) should displace *T. canaliculata* Raf. (1832).

The second species, *T. discolor* Raf. New Fl. ii. 87 (1837), was reduced without question to *T. virginiana* L. It is noteworthy, however, that *T. discolor* came from Florida and Alabama, whereas Anderson & Woodson recognized *T. virginiana* as following the mountains southward only into northwestern Georgia and eastern Tennessee, and to eastern Missouri. The plant of northwestern Florida and adjacent Alabama with the characters given by Rafinesque for his *T. discolor* (1837) is *T. hirsutiflora* Bush in Trans. Acad. Sci. St. Louis, xiv. 184 (1904), for which the monographers cite 11 numbers studied from Florida and Alabama. Anderson & Woodson describe the latter with "stems erect or ascending, straight . . . , 1.2–4.9 dm. [overlooking their misprint "cm.", which, corrected, equals 5 inches—1 foot, 7½ inches] long, . . . spreading-pilose, or hirsute" (Rafinesque said "Stem strait pilose . . . pedal and bipedal"); "leaves firmly membranaceous, deep green to somewhat subglaucous, . . . linear-lanceolate, . . . scatteringly pilose" (Rafinesque said "leaves lanceolate . . . glaucous and pilose beneath"); "cymes umbellate, . . . ; pedicels . . . pilose, . . . more or less reflexed . . . ; sepals . . . pubescent" (Rafinesque said "umbel terminal . . . , peduncles short nodding pilose like the calyx"). *T. discolor* Raf., however, is invalidated by *T. discolor* L'Héritier (1788). If it belongs in the synonymy of *T. virginiana* so does *T. hirsutiflora.* They may be only a southern extreme of a variable species.—M. L. Fernald.

Juncus acutiflorus rediscovered in America.—In his *Monographie des vrais Joncées,* Mém. Soc. Hist. Nat. Paris. iii. 128 (1827), Laharpe, after stating the European range of *Juncus acutiflorus* Ehrh., said "M. de La Pylaie l'a rapportée dernièrement de Terre-Neuve". In Rhodora, xxviii. 51 and 87 (1926), Professor Fernald emphasized the failure of others to rediscover

in Newfoundland this very distinct plant of central, southern and southwestern Europe.

Two years ago I discovered on Langlade (Little Miquelon) a strange Juncus 3 or 4 feet high, growing in big masses in low open woodland back of the sea. The plant flowered but did not fruit, the summer having been rather cold. I could not find any clue to its identity either in Gray's Manual or in Britton and Brown's Illustrated Flora. I brought it to Harvard University where Professor Fernald was kind enough to identify it for me as the long-lost *J. acutiflorus*. This plant has been found in only one locality. It is now evident that Laharpe's record of LaPylaie's discovery was not an error.—M. LeHors, St. Pierre et Miquelon.

Imagined Wisdom without Understanding.—While I was still a schoolboy, my father, with both wisdom and understanding, employed me to copy longhand a baccalaureate address he was to deliver, with the time-honored text: "Wisdom is the principal thing: therefore get wisdom: and with all thy getting get understanding". I at least got the idea and have subsequently endeavored to pass it on to such students as were susceptible to advice; but it is too often apparent that many people who aim to impart to others what they conceive as wisdom fail to realize the all-important need of understanding. At the moment I have before me one of the most complete assemblages of colloquial or so-called common names of American plants probably ever brought together.[1] This compendium is in the pages of the beautifully printed and seemingly authoritative *Dictionary of American English*[2].

Glancing through the first half of Volume I, "A—Corn patch" (the proper use of hyphens seems to be a stranger to the editors), one can hardly fail to be impressed by the large porportion of space given American names of plants and the fact that someone has done a great amount of compiling, mostly from books of travel or exploration or from fiction or essays, only rarely from accurate botanical writings. All this accumulation, if properly to serve the innocent public, should have been done with real understanding of the matter dealt with; but, apparently, the compilers have been content to compile, without the elementary realization that colloquial names and names loosely used, especially by the uninformed, are very "tricky": that their proper interpretation requires very intimate knowledge of plant-identities and local usages and a clear, instead of a completely muddled understanding. A few years ago Dr. George Neville Jones, reviewing a lexicographer's venture into plant-taxonomy, Criswell's Lewis & Clark: Linguistic Pioneers[3], rightly said: "When the author ventures into the botanical field . . . he loses the trees in the forest . . . Many of his results and conclusions are nothing less than ludicrous", and he concluded with these words which are largely

[1] Of course excepting the authoritative (therefore not much quoted) collection of *Popular American Plant-Names* by Fanny D. Bergen in the Journal of American Folk-lore, vols. v–ix (1892–1896).

[2] *A Dictionary of American English on Historical Principles*, compiled at the University of Chicago under the editorship of Sir William A. Craigie, co-editor of the Oxford English Dictionary, and James R. Hulbert, Professor of English, the University of Chicago. The University of Chicago Press. 1938 (Vol. I).

[3] See Rhodora, xliii. 92–94 (1941).

applicable to the *Dictionary of American English*, "It is a pity that the science of systematic botany has to bear the burden of such unripe scholarship".

I have taken the time from more important work to glance over a few of the botanical items under the letters *A* and *B*. These are often completely disheartening. Under **Acacia** the first item is "The North American locust-tree (*Robinia pseudacacia*)", the second "Popularly applied to other species of this genus or to similar plants of other genera", followed by *Gleditsia*, *Gymnocladus* and *Parkinsonia*. Singularly enough, there is no mention of the great genus *Acacia* itself, correctly called by that name in the Southwest, and generally cultivated in northern greenhouses under its correct name.

Under **"Alligator pear"** we read of the avocado "of the southern States", with no intimation that it was introduced there from the Tropics; and surely, in these days at least, the name is not generally applied to the indigenous and more northern tiny- and inedible-fruited Red Bays. In fact, the colloquial term **Bay** proved a little too involved for the nonbotanical compilers of botanical data. The definition, "Any of various trees and shrubs more or less resembling the laurel of southern Europe", is pretty sketchy when we consider that throughout the area of their great development in America the species of *Magnolia*, with showy sepals and petals 2 to 6 inches long, are regularly known as "bay". The resemblance to "the laurel of southern Europe", with tiny and insignificant flowers, is about as striking as that of Poinsettia to Chickweed!

"American yew. The Pacific yew, *Taxus baccata*, var. *Canadensis*" leaves much to be desired, especially as the quotations are from eastern writers who emphasize "a spreading shrub, about 3 or four feet high" or "a prostrate shrub with straggling branches". This is, of course, the common "Ground Hemlock" of the eastern States, eastern Canada and Newfoundland, *Taxus canadensis*. The Pacific Yew, *T. brevifolia*, is a tree up to 75 feet or more high!

Every one who has a flower-garden has "asters", one of the "short and simple annuals of the poor", with great showy heads of flowers, *Callistephus chinensis*. Only the more erudite and rare individual calls them "China Asters"; they are colloquially "Asters". Compilers of a dictionary of American usages, who delight in illiteracies, colloquialisms and slang, such as "acrost", "ain't", "beaut", etc., might have been familiar enough with common usages to have included *Callistephus* in their definition: **"Aster.** One or other plant of the genus *Aster*, having numerous species native to America". Real understanding was, evidently, too much to expect, but, if the author of *Nature's Story* (1884) could be consulted, it is probable that he would admit that he had *Callistephus* in mind when he wrote the passage quoted as illustrative "of the genus *Aster*": "Amy . . . exulted in the extent and variety of their finely quilled and rose-like asters and dahlias".

"Apple" comes in for many compounds: **"Apple borer** . . . , **Apple-boy** . . . A boy who sells apples", followed by **"Apple brandy** . . . A liquor distilled from apple cider". Then, following on through **"Apple-butter", "Apple-cart", "Apple-jack", "Apple-sauce", "Apple-woman** . . . A woman who sells apples", we make the appalling discovery that there is no definition of Apple-cider. How can anyone distill Apple-brandy from Apple-cider if the requisite cider is not officially defined?

There is something perhaps naive in the definition: **"Alder** . . . A tree or shrub of the genus *Alnus;* in America commonly the black alder (q. v.)". Turning to **"Black alder"** we read the correct definition: "A deciduous berry-bearing shrub, *Ilex verticillata*". The *Ilex* is generally "Black Alder"; *Alnus* is almost as invariably "Alder".

One could go on and on but what's the use? One case more, however, should be noted because it so thoroughly displays the lack of understanding, not to say of wisdom, exhibited in these volumes. Two genera of plants are usually known with us as Adder's-tongue: 1st, *Ophioglossum*, fernlike plants, especially the widely distributed, semicosmopolitan *O. vulgatum*, with the sterile portion of the frond dilated, the fertile ending in a spike of sporangia;

2nd, *Erythronium*, Adder's-tongue, Adder's-tongue Lily or Dog's-tooth Violet, a lily with bulbous base, narrow tongue-like and usually mottled leaves, and a drooping bell-shaped yellow, whitish or bluish-tinged flower. Both *Ophioglossum vulgatum* and *Erythronium americanum* (the commonest eastern species) grow in woodlands or meadows. It is, therefore, disconcerting to read under definition 1 in the *Dictionary of American English*, "A species of fern, *Ophioglossum vulgatum;* so called from the shape of the spore-bearing branches" [*O. vulgatum* has a solitary spike], the following extracts supposed by the editors to refer to the *Ophioglossum:* "Adder's-tongue grows two feet high, in running water" [this from Williamson's *History of Maine*, a nonbotanical book replete with misidentifications and misunderstandings; surely *Ophioglossum* is not characteristically of running water in Maine or elsewhere nor two feet high!]; "We brought in our aprons . . . spotted adder's tongues, and dandelions" [just as children still bring in Erythronium and Dandelions in early spring]; "On account of its narrow spotted leaves [*Erythronium*], it is often called 'Adder's Tongue'"; "The spotted adder's tongue, with its waving yellow bells of blossom" [as if *Ophioglossum* is spotted and has "waving yellow bells of blossom". Someone could have been found at the sponsoring institution who would know that ferns and fern-like plants do not have "blossoms"].

These quotations and their sources (writers on local history or of chatty sketches, fiction, poetry and other so-called "literature", almost never careful botanists or those who accurately know plants) and the unintelligent guesses as to what was meant show where one of the troubles lies. Take, for example, Williamson's *History of Maine*, from which the first quotation under *Adder's-tongue* was derived. Williamson was not known as a botanist, but in his *History* he naïvely enumerated the fishes, birds, mammals, plants and other natural life of Maine, naïvely because he made such egregious errors. For instance, the "*cat-tail Flag*" (Typha) identified as "Polypodium", the latter name for many centuries belonging to a group of ferns! Again, quoting from Williamson, "The *eighteenth* and last *kind* of indegenous tree . . . is the *Willow* . . . It is of two species, the *swamp*, or *red*, and the *white*—the former is the first inhabitant of the woods to welcome by its blossoms the return of spring.§", the foot-note identification of this "willow" being "§*Swamp Sumach* (Rhus Toxicodendrum)". The "welcome" given by Swamp Sumach is usually not a welcome one!

"Too much is enough"; but it is a bit puzzling, in view of the admission of such trivialities as **"Apple-woman"**, that many commonly used names of familiar plants are omitted: *Arnica*, a relatively large and showy genus is unmentioned, though the name "Arnica" is in very general use in New England, eastern Canada and Newfoundland for *Leontodon autumnalis*, the Fall Dandelion; Baked-Apple, Bake-Apple or Baked-Apple berry, universally used in eastern Maine, Nova Scotia, Newfoundland, Labrador and elsewhere for the Cloudberry of Scotland, and one of the indispensible fruits of those regions; *Brodiaea*, a large and familiar genus of beautiful western lilies; Beauty-berry (*Callicarpa*), coloring the autumnal woods of the South; and many scores more which a compiler with elementary knowledge of American plants should have caught, including, as typically American from the English editor's viewpoint, "Billion-dollar Grass".

From the emphasis "ON HISTORICAL PRINCIPLES" any one consulting the *Dictionary of American English* has a right to look for the English names used in the earlier, as well as the later enumerations of plants. For instance, Josselyn's *New Englands Rarities* (1672) gives some of the early usages. The book was known to the compilers, for their first quotation under **Bear-berry** (for *Arctostaphylos Uva-ursi*) was taken from it. Unfortunately, the editors or compilers, not understanding simple botanical descriptions, got no illumination from Josselyn's "*Cran Berry*, or *Bear Berry*", which grows in marshes "over-grown with Moss; the tender Branches . . . run out in great length, . . . the Berries, hanging by long small foot stalks, no bigger

than a hair; at first they are of a pale yellow Colour, afterwards red, and as big as a Cherry; some perfectly round, others Oval, all of them hollow, of a sower astringent taste". How any one considered competent to prepare a dictionary can have missed the fact that Josselyn's "*Cran Berry*" and "*Bear Berry*" were, as he said, identical, and were both *Vaccinium macrocarpon*, is almost beyond comprehension. Since, however, Josselyn (1672) was consulted, it is too bad, if the HISTORICAL sequence of usages is so important, that he was so generally ignored (as were many other early writings on American plants). Among the names of plants appearing in Vol. 1 of the *Dictionary* the following, selected from many, may be noted as occurring in Josselyn's *Rarities* and greatly antedating the first American records known to the editors, the dates of which are given, Josselyn's date (1672) being understood: **Cats-tail,** 1791; **Blue flag** (*Iris versicolor* and others), 1784—Josselyn had *Blew Flower-de-luce;* **Adder's-tongue** (*Ophioglossum*), all the *Dictionary's* quotations belonging to *Erythronium,* the earliest from 1832—Josselyn had *Adder's-tongue* and correctly understood it as *Ophioglossum,* a record which, if used, would have partly "saved the faces" of the editors; **Arsmart,** 1784; **Catmint,** 1737; **Clotbur,** 1817; **Cinquefoil,** 1778—Josselyn had *Cinkfoil;* **Avens,** 1784; **Cleavers,** 1781—Josselyn had *Clivers;* **Brake,** 1748, etc., etc.

I have been assured that the *Dictionary of American English* is "the last word" in its fields. It is hoped that, before any more words are published in the field of colloquial names of plants, the editors will add to their staff a thoroughly competent systematic botanist, with human interests as well. The treatment of this exacting field is one which cannot be covered by those whose ignorance of it is so apparent and who do not realize that their "wisdom" needs constant reinforcement from "understanding". It is not creditable to place such lack of understanding before the unsuspecting public as American scholarship; and it is not too much to insist that expensive and seemingly authoritative works of reference should be prepared with at least ordinary intelligence.—M. L. FERNALD.

TWO PLANTS NEWLY INTRODUCED IN EASTERN MASSACHUSETTS.—Neither of the two following species has been reported from the Boston area, nor from the State of Massachusetts either, so far as I have investigated.

ALLIARIA OFFICINALIS Andrz. I discovered this by a shady roadside in Cohasset, Norfolk County, on May 13, 1944, just as it was coming into bloom. There were three small clumps of this interesting biennial. It is an old English garden plant used as a salad herb, according to Fernald and Kinsey. Its chief virtue is that its toothed heartshaped leaves combine the tang of the mustard with a strong odor of garlic. It is therefore called the garlic-mustard, and its name *Alliaria* is derived from *Allium,* the onion or garlic. "Sauce-alone" is an old English name for this plant. It has also been collected at Chester, Conn., by *Mrs. S. G. Smith,* May, 1897, also from Naugatuck by *A. E. Blewitt,* May 18, 1908.

ELSHOLTZIA PATRINI (Lepechin) Garcke. I found this weed close to the sidewalk in an ill-kept dooryard near the Liberty

School at Revere Beach on Oct. 1, 1943. In general appearance, especially as to its leaves, it had a resemblance to *Acalypha*, but I soon discovered its square stem and spikes of pale purple flowers. This Asiatic plant was included in our manuals because it was found by *J. L. Northrop* growing in great abundance in clearings and along the shore of Temiscouata Lake, near Notre Dame du Lac, Quebec. It has since been found in some abundance by Professor *M. L. Fernald*, growing beside the railroad track at New Limerick, Aroostook County, Maine, on Aug. 13, 1909. It was also found, Sept. 10, 1938, spontaneous and freely spreading in a dooryard in Chelsea, Orange County, Vt., by *J. G. Underwood*. Professor Fernald reports it as still flourishing in recent years at Notre Dame du Lac.—Clarence Hinckley Knowlton, Hingham, Mass.

Is there any Evidence of Sericocarpus bifoliatus in the Manual Range?—The hoary-pubescent *Sericocarpus bifoliatus* (Walt.) Porter (*S. tortifolius* Nees), a plant with small obovate leaves, has long been accorded a range northward into Virginia. The Virginia record seems to have started with Torrey & Gray, Fl. ii. 103 (1841), where "Virginia!" begins the stated range; but the paragraph ends with "In a specimen collected in Virginia by Mr. Durand, the lower leaves are sparingly crenate-serrate, and the others entire". Otherwise I find no evidence of the species from north of Pamlico County, North Carolina. I have not located the Durand specimen, which, as shown by the note, was atypical. We need a better voucher from Virginia.—M. L. Fernald.

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